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Huang

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(54) **COOLING FAN WITH LIGHT-EMITTING EFFECT**

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(51) **Int. Cl.**

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F21V 8/00	(2006.01)
F21V 5/04	(2006.01)
F04D 29/52	(2006.01)
F21V 19/00	(2006.01)
F04D 25/06	(2006.01)

(52) **U.S. Cl.**
CPC ***F21V 33/0096*** (2013.01); ***F04D 25/0613*** (2013.01); ***F04D 29/005*** (2013.01); ***F04D 29/522*** (2013.01); ***F21V 5/048*** (2013.01); ***F21V 19/003*** (2013.01); ***G02B 6/0051*** (2013.01); ***G02B 6/0078*** (2013.01)

(58) **Field of Classification Search**
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See application file for complete search history.

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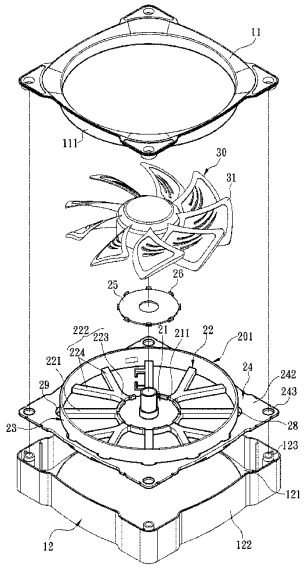
(57) **ABSTRACT**

A cooling fan having a light-emitting effect comprises a frame body, a light-emitting assembly and a fan blade assembly, wherein the frame body has a base and an upper cover. The light-emitting assembly is mounted on the frame body and includes a circuit board, a plurality of light-emitting elements capable of emitting a light respectively and a light guide plate. The light guide plate includes a plurality of light guide strips which correspond to each of the plurality of light-emitting elements respectively to guide the light, and a light diffusion portion which is connected with the plurality of light guide strips. The light diffusion portion includes a first diffusion portion in a position corresponding to each of the plurality of light guide strips. The fan blade assembly is mounted in the frame body, such that the light passes through the first diffusion portions and then forms a diffused light.

20 Claims, 10 Drawing Sheets



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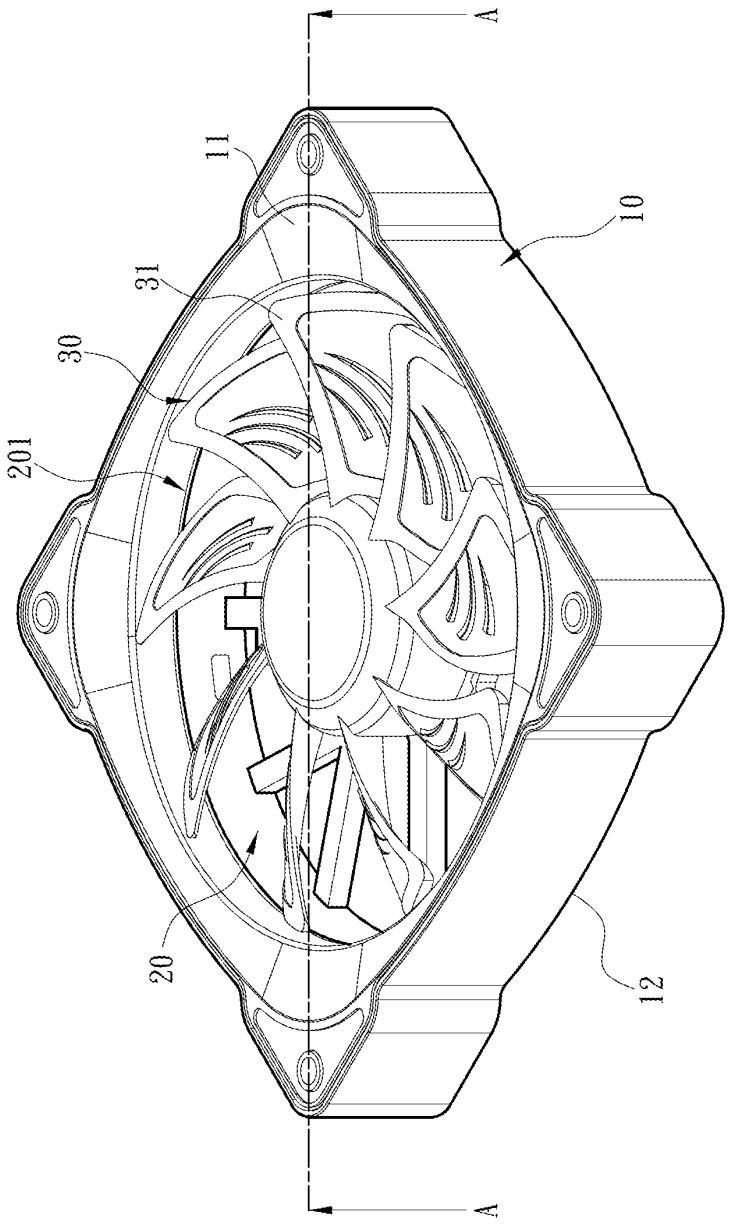

Fig. 1

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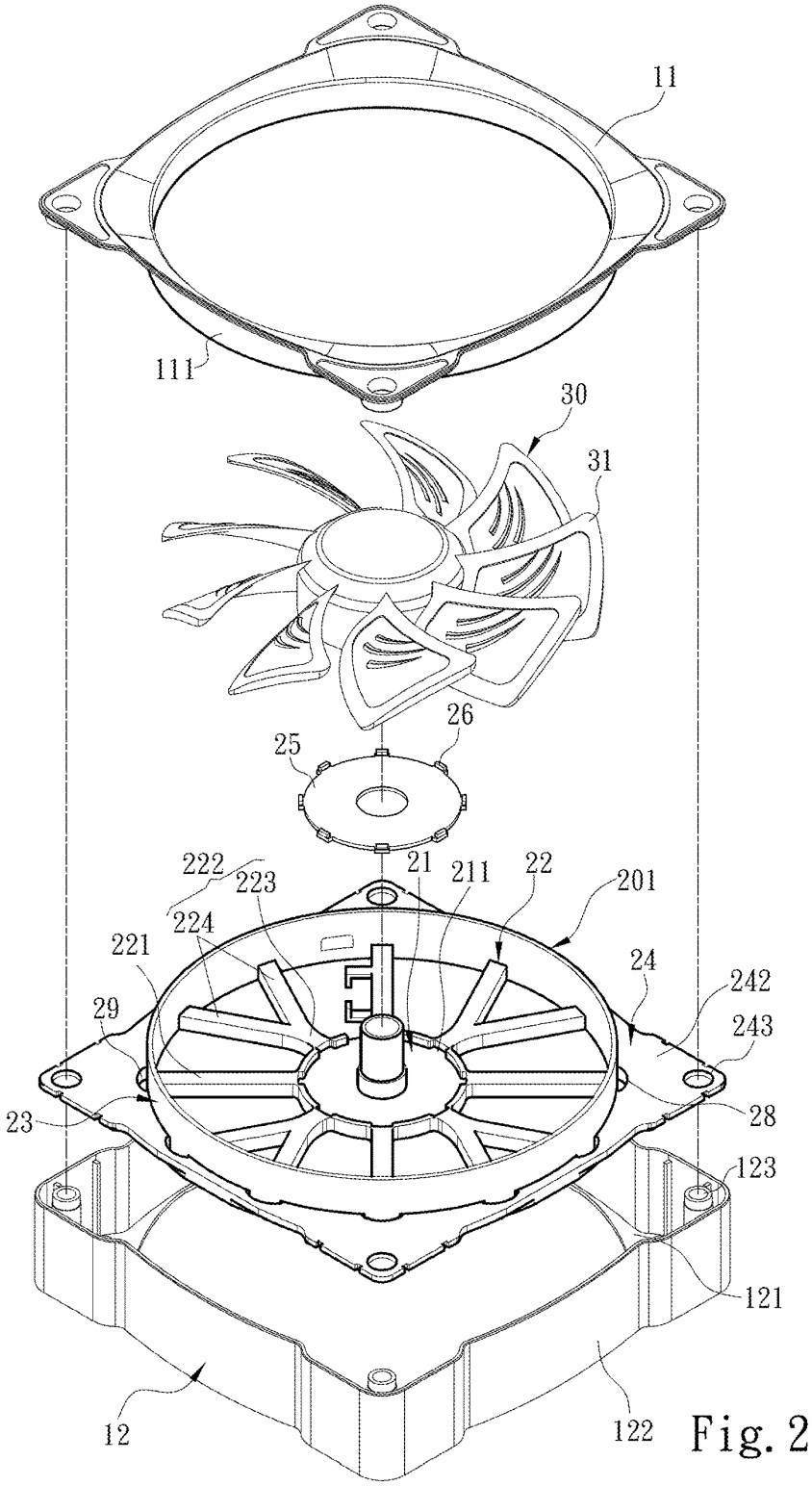
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Fig. 2

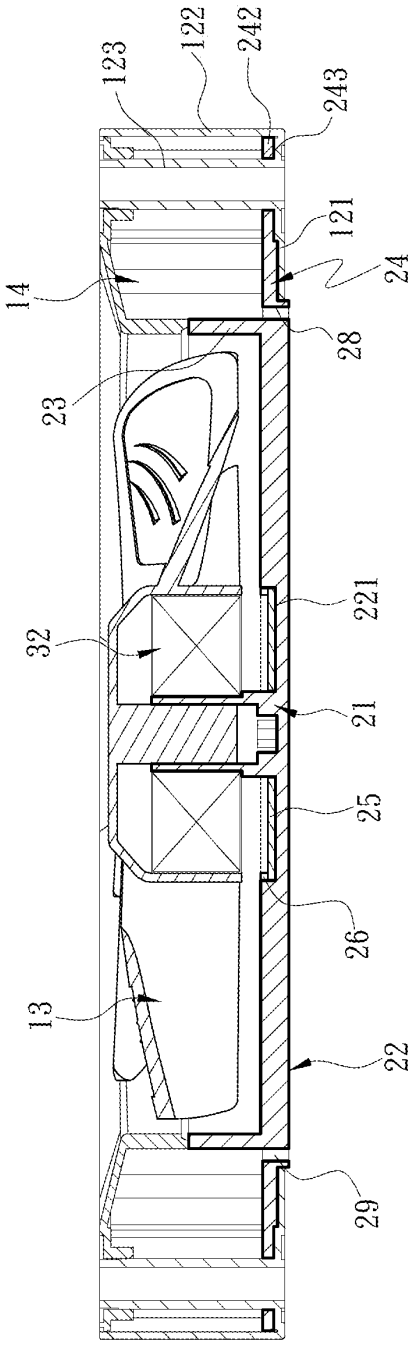


Fig. 3

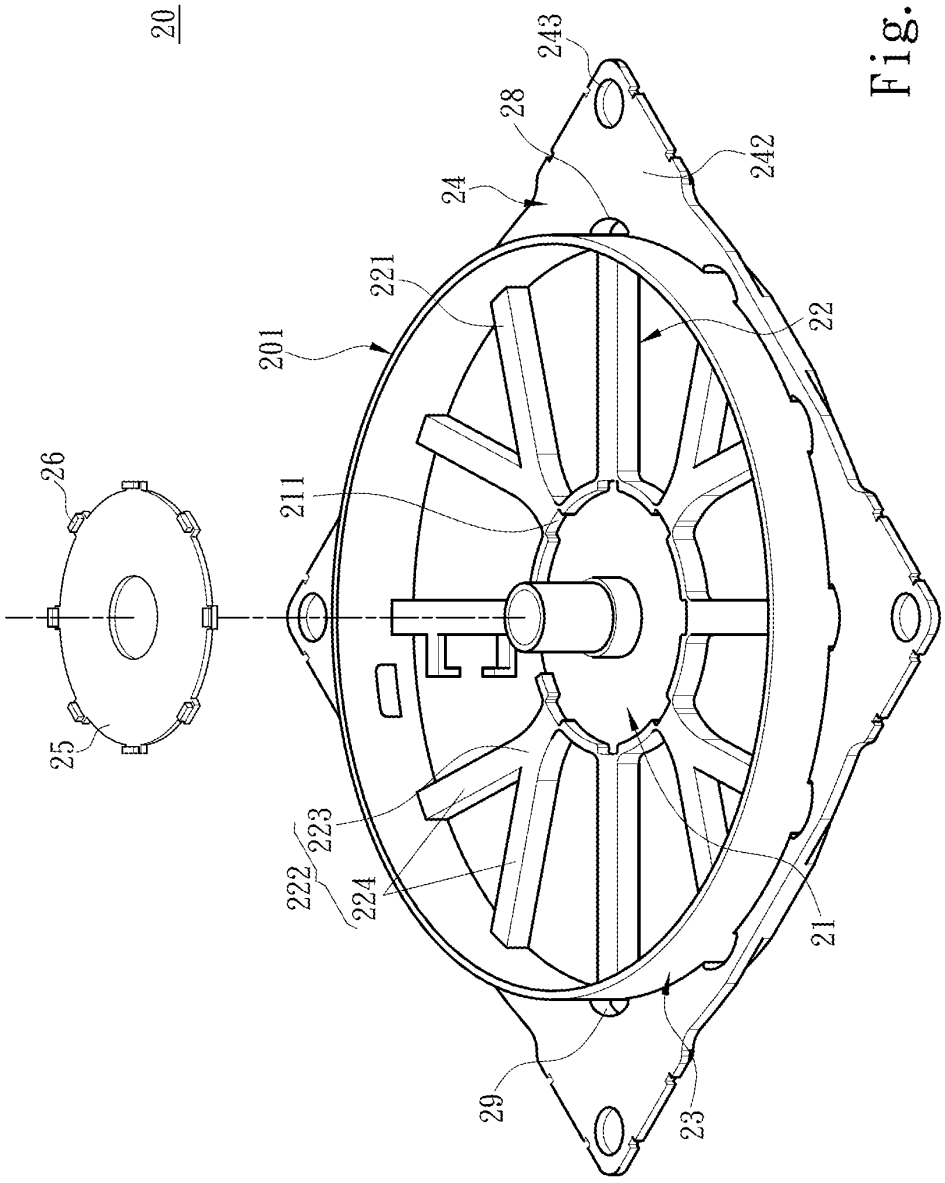


Fig. 4

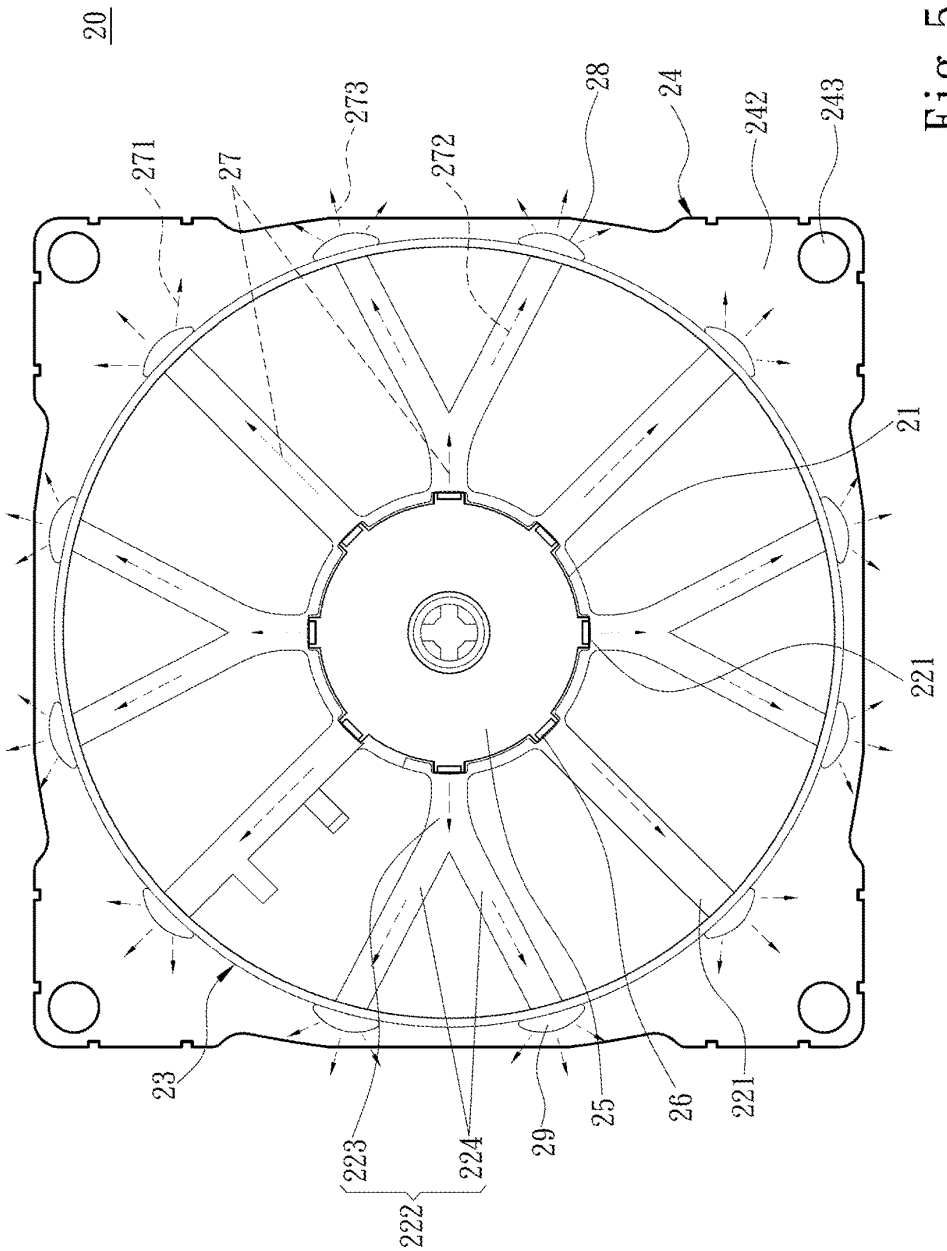
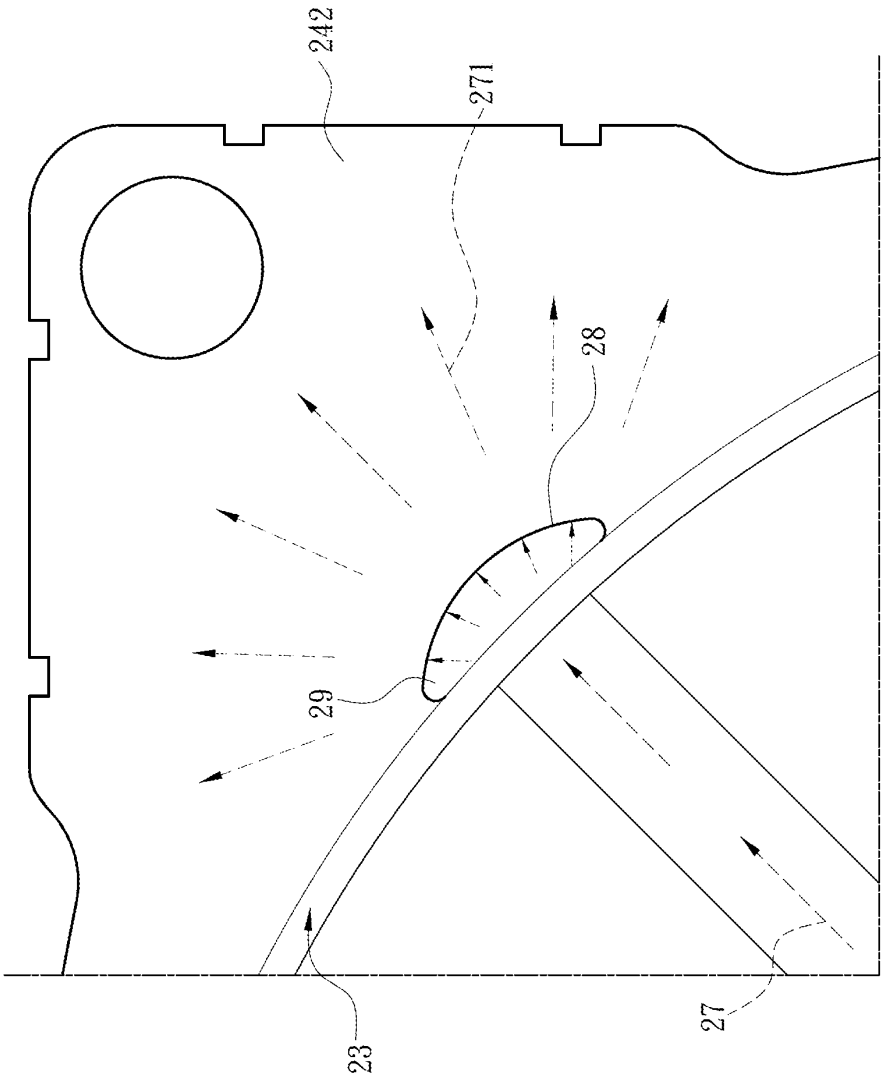


Fig. 5A

Fig. 5B



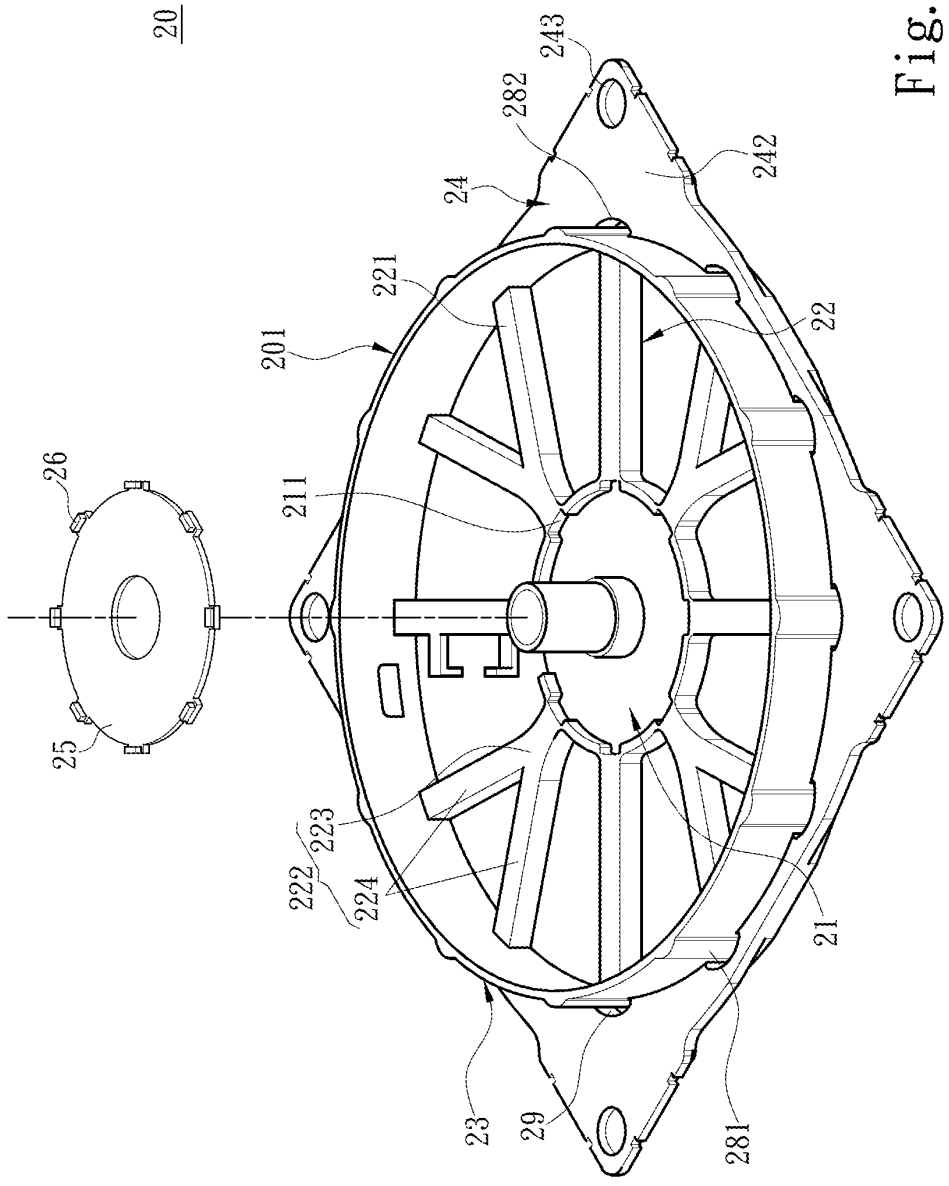


Fig. 6

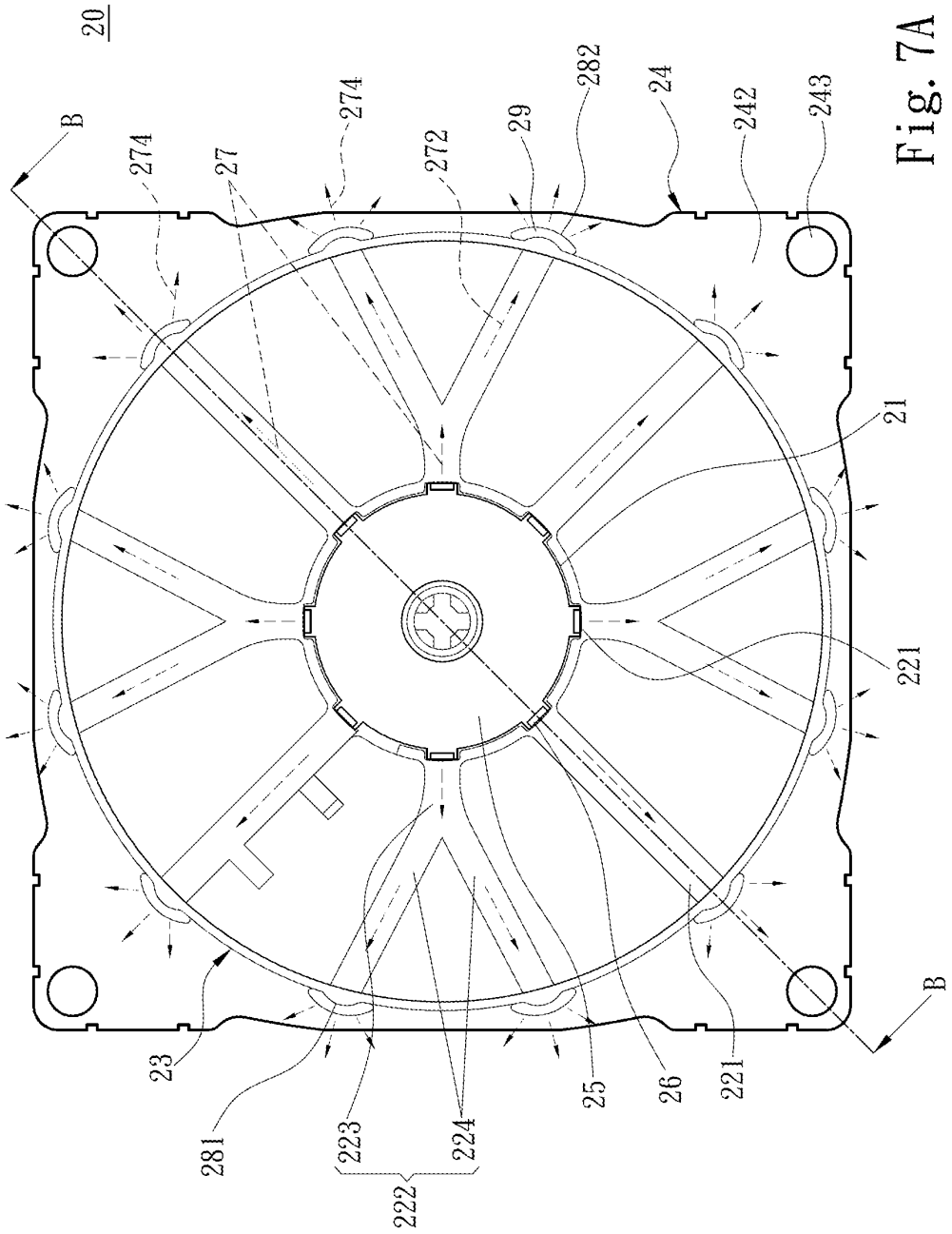

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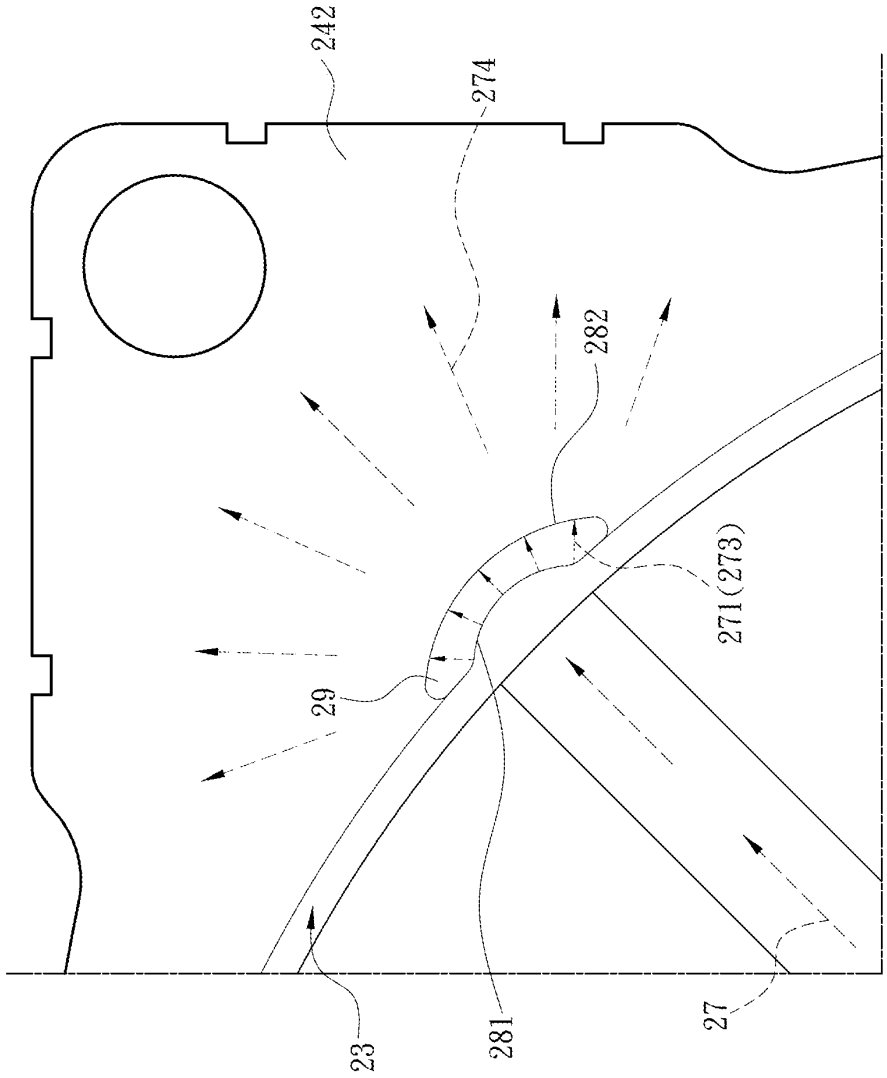
Fig. 7A

Fig. 7B



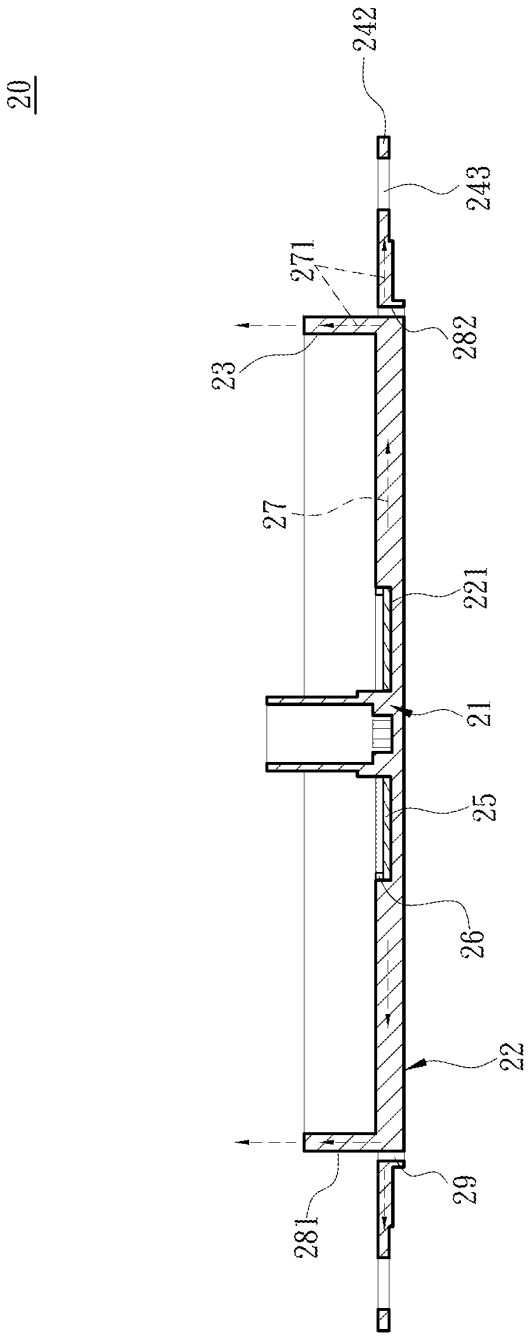


Fig. 8

COOLING FAN WITH LIGHT-EMITTING EFFECT

FIELD OF THE INVENTION

The present invention relates to a cooling fan having a light-emitting effect, and in particular to a cooling fan capable of emitting light uniformly.

BACKGROUND OF THE INVENTION

A fan used in a computer is mainly used to discharge the thermal energy released by the operation of a host computer to the outside. The conventional host computer is often placed in a corner because of its monotony. In order to increase the visibility of the host computer, there are many transparent or light-emitting cases available in the market that can render the host computer different light changes, a variety of cooling fans, heat-conducting water drains and the like which can emit different light changes are provided in the host computer so as to enhance the visibility of the host computer through different light changes.

For example, U.S. Pat. No. 9,777,918 discloses a light-emitting cooling fan structure dissipating heat, wherein a circuit board is arranged in a fan body, and the circuit board is sequentially provided with a first light-guiding frame and a second light-guiding frame, and the circuit board is provided with a plurality of side-light lighting elements. Every two side-light lighting elements are reversely arranged and spaced on a rim of the circuit board. A bottom of the first light-guiding frame is annually provided with a lighting reflection layer, and the plurality of side-light lighting elements is arranged below the lighting reflection layer. The lighting reflection layer reflects light sources of the side-light lighting elements to pass through an edge to a top of the first light-guiding frame and the second light-guiding frame, thereby uniformly scattering and forming a circular light source, such that the cooling fan structure presents a unique lighting effect of a uniform annular light source.

However, the aforementioned U.S. Pat. No. 9,777,918 can provide a uniform annular light source on one side of the cooling fan. However, this patent does not provide a uniform lighting effect for the entire cooling fan. Meanwhile, the one-side lighting will make the use of the cooling fan more monotonous.

SUMMARY OF THE INVENTION

In view of this, the main objective of the present invention is to provide a cooling fan having a light-emitting effect.

According to said objective, the present invention provides a cooling fan having a light-emitting effect. The cooling fan comprises a frame body, a light-emitting assembly and a fan blade assembly. The frame body includes a base and an upper cover which is made from a light-permeable material and forms an installation space together with the base. The light-emitting assembly is mounted on the base and includes a circuit board, a plurality of light-emitting elements which are electrically connected with the circuit board and emit a light respectively, and a light guide plate. The light guide plate includes a plurality of light guide strips which correspond to each of the plurality of light-emitting elements respectively to form a guide path that guides the light, and a light diffusion portion which is connected with the plurality of light guide strips. The light diffusion portion includes a first diffusion portion in a position corresponding to each of the plurality of light guide strips, such that the light passes through the guide path to form a diffused light via the first diffusion portion, and the upper cover is in a uniform light-emitting state. The fan blade assembly is arranged in the installation space, and includes a driving unit which is electrically connected with the circuit board and a fan blade which is driven by the driving unit to rotate in the installation space.

In an embodiment, the light diffusion portion includes a first diffusion portion in a position corresponding to each of the plurality of light guide strips, such that the light passes through the guide path and then forms a diffused light using the first diffusion portions, and therefore the upper cover is in a uniform light-emitting state.

In an embodiment, the first diffusion portion is a semi-convex lens which extends outwards from the light diffusion portion.

In an embodiment, the light guide plate further comprises a central light-emitting portion in which the circuit board is arranged, and the plurality of light-emitting strips are connected between the central light-emitting portion and the light diffusion portion.

In an embodiment, the light diffusion portion further comprises a light diffusion plate, and each of the first diffusion portions is positioned on the light diffusion plate and forms a gap portion with the light diffusion portion.

In an embodiment, the first diffusion portion is a semi-concave lens surface.

In an embodiment, the plurality of light guide strips further include a plurality of first light guide strips and a plurality of second light guide strips, wherein each of the plurality of first light guide strips extends to the light diffusion portion from each of the plurality of light-emitting elements; each of the plurality of second light guide strips further comprises a first section which extends from the plurality of light-emitting elements and two second sections which extend to the light diffusion portion from the first section respectively.

In an embodiment, the diffused light further comprises a first diffused light and a second diffused light, wherein the first diffused light is formed by passing through the plurality of first light guide strips and then through the first diffusion portions; the second diffused light is formed by passing through the first sections of the plurality of second light guide strips to form two branched lights and then enabling the two branched lights to pass through the second sections and then through the first diffusion portion.

In an embodiment, a first connection portion and a second connection portion which are connected each other are further arranged between the light diffusion plate and the base.

In an embodiment, the base is further made from a light-permeable material, such that the entire frame body is in a uniform light-emitting state using the diffused light.

In an embodiment, the base further comprises a bottom plate in which the first connection portion is arranged, and a plurality of outer side plates which are annularly arranged on the bottom plate.

In an embodiment, the light diffusion portion further comprises a light diffusion plate, and a second diffusion portion is arranged in a position, which corresponds to the first diffusion portion, on the light diffusion plate; in addition, a gap portion is formed between the second diffusion portion and the first diffusion portion.

In an embodiment, the first diffusion portion is a semi-convex lens, and the second diffusion portion is a semi-concave lens portion.

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In an embodiment, the diffused light further includes a first diffused light, a second diffused light and a third diffused light, wherein the first diffused light is formed by passing through the first light guide strips and then through the first diffusion portion; the second diffused light is formed by passing through the first sections of the second light guide strips to form two branched lights and then enabling the two branched lights to pass through the second sections and then through the first diffusion portion; the third diffused light is formed by enabling the first diffused light and the second diffused light to pass through the second diffused portion.

In an embodiment, a first connection portion and a second connection portion which are connected each other are further arranged between the light diffusion plate and the base.

In an embodiment, the base is further made from a light-permeable material, such that the entire frame body is in a uniform light-emitting state using the diffused light.

Through the above technical solution, compared with the prior art, the present invention can substantially achieve the following beneficial effects.

According to the present invention, the light emitted from the plurality of light-emitting elements is uniformly diffused through the convex lens portion on the light diffusion portion and the semi-concave lens surface of the gap portion, such that the entire upper cover or the entire frame body can present a uniform light-emitting state to increase the visibility when the cooling fan is used.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a stereoscopic schematic drawing of a first embodiment of the present invention.

FIG. **2** is stereoscopic exploded schematic drawing of the first embodiment of the present invention.

FIG. **3** is a sectional schematic drawing of the first embodiment of the present invention.

FIG. **4** is a stereoscopic schematic drawing of a light-emitting assembly of the first embodiment of the present invention.

FIG. **5**A is a top-view planar schematic drawing of the light-emitting assembly in the first embodiment of the present invention.

FIG. **5**B is an enlarged partial schematic drawing of FIG. **5**A.

FIG. **6** is a stereoscopic schematic drawing of a light-emitting assembly in a second embodiment of the present invention.

FIG. **7**A is a top-view planar schematic drawing of the light-emitting assembly in the second embodiment of the present invention.

FIG. **7**B is an enlarged partial schematic drawing of FIG. **7**A.

FIG. **8** is a sectional schematic drawing of the light-emitting assembly in the second embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The detailed description and the technical content of the present invention will now be described in conjunction with the drawings as follows.

First, as shown in FIG. **1**, FIG. **2**, FIG. **3**, FIG. **4**, FIG. **5**A and FIG. **5**B, it can be seen that the present invention provides a cooling fan having a light-emitting effect. The cooling fan comprises a frame body **10**, a light-emitting assembly **20** and a fan blade assembly **30**.

The frame body **10** comprises an upper cover **11** and a base **12** which forms an installation space **13** and an accommodating space **14** together with the upper cover **11**. The base **12** includes a bottom plate **121** and a plurality of outer side plates **122** which extend from the bottom plate **121** and surround the bottom plate **121**. The accommodating space **14** surrounds the installation space **13**. The base **12** comprises a plurality of first connection portions **123** which are arranged in the accommodating space **14** and project towards the upper cover **11**, such that the base **12** and the upper cover **11** are assembled and fixed through the plurality of the first connection portions **123**. In the present embodiment, the upper cover **11** and the base **12** may further be made from a light-permeable material, such that the entire frame body **10** is in a light-permeable state, or the upper cover **11** may be made from a light-permeable material while the base **12** is made from a light-tight material, such that the upper cover **11** is in a light-permeable state. When the base **12** is made from the light-tight material, a reflection layer is respectively formed on one side of the bottom plate **121** and the plurality of outer side plates **122** of the base **12** inside the accommodating space **14**, so as to increase the reflectivity of the bottom plate **121** and the plurality of outer side plates **122**. The reflection layers can be formed by embossing, coating or deposition.

The light-emitting assembly **20** is mounted on the base **12**. As shown in FIG. **1**, FIG. **2**, FIG. **3**, FIG. **4**, FIG. **5** and FIG. **6**, the light-emitting assembly **20** comprises a light guide plate **201** which is made from a light-permeable material, a circuit board **25** arranged on the central light-emitting portion **21**, and a plurality of light-emitting elements **26** which are electrically connected with the circuit board **25** to emit a light **27** respectively. The light guide plate **201** includes a central light-emitting portion **21** inside the installation space **13**, a plurality of light guide strips **22** which are located inside the installation space **13** and extends outward from the central light-emitting portion **21**, a light diffusion portion **23** which surrounds the central light-emitting portion **21** and is connected with the plurality of light guide strips **22**, a light diffusion plate **24** which extends from the light diffusion portion **23** and is arranged inside the accommodating space **14**, and a first light diffusion portion **28** which is located between the light diffusion portion **23** and the light diffusion plate **24**, such that the light-emitting assembly **20** is mounted on the base **12**.

A segment gap **211** is formed between each light guide strip **22** and the central light-emitting portion **21**. When the circuit board **25** is mounted on the central light-emitting portion **21**, each of the plurality of light-emitting elements **26** can be located on the segment gap **211** and correspondingly arranged on one end surface, which is connected with the central light-emitting portion **21**, of each light guide strip **22**. In the present embodiment, the plurality of light guide strips **22** include a plurality of first light guide strips **221** and a plurality of second light guide strips **222** which are staggered from the first light guide strips **221**; each of the first light guide strips **221** is linearly connected between the central light-emitting portion **21** and the light diffusion portion **23**; each of the second light guide strips **222** is Y-shaped and comprises a linear first section **223** which extends from the central light-emitting portion **21** and two second sections **224** which extend from the first section **223** respectively and are connected to the light diffusion portion **23**.

In the present embodiment, the first diffusion portion **28** is arranged on a position on the light diffusion plate **24** which corresponds to each of the first light guide strips **221** and each of the second sections **224**. The first diffusion portion **28** is a semi-concave lens surface, and a gap portion **29** is formed between the first diffusion portion **28** and the light diffusion portion **23**, such that the light diffusion plate **24** is spaced from the light diffusion portion **23** via each of the first diffusion portions **28** and each of the gap portions **29**. The light diffusion plate **24** is further provided with a plurality of extending diffusion portions **242** which project relative to each of the first light guide strips **221**. Each of the extending diffusion portions **242** is arranged at a relative position, which corresponds of the light diffusion portion **23** relative to each of the first light guide strips **221**, of the light diffusion portion **23**, and a second connection portion **243** which is connected to each of the first connection portions **123** may be respectively arranged at a position on each of the extending diffusion portions **242** relative to each of the first connecting portions **123**.

In the present embodiment, although there are four extending diffusion portions **242**, four first connection portions **123**, four first light guide strips **221**, four second light guide strips **222** and four second connection portions **243** respectively, such that the cooling fan is square integrally, the present embodiment is not intended to limit the appearance of the present invention, but the number thereof may vary with the overall appearance.

The fan assembly **30** is arranged in the installation space **13** of the frame body **10** and comprises a fan blade **31**, and a driving unit **32** which is used for driving the fan blade **31** to rotate inside the installation space **13**, wherein the driving unit **32** is arranged on the central light-emitting portion **21** and electrically connected with the circuit board **25**, and the fan blade **31** is sleeved outside the driving unit **32**.

When the cooling fan of the present invention is assembled, it is essential that the circuit board **25** of the light-emitting assembly **20** is mounted on the light guide plate **201** first, such that each of the plurality of light-emitting elements **26** is positioned at the end edge, where the segment gap **211** is located, of the central light-emitting portion **21** relative to each of the light guide strips **22**, and then the light-emitting assembly **20** is mounted on the base **12**. The light-emitting assembly **20** is sleeved outside each of the first connection portions **123** via each of the second connection portions **243**, such that the light-emitting assembly **20** can be positioned and assembled on the base **12** indeed. Next, the upper cover **11** is assembled on the base **12**, such that the plurality of outer side plates **122** are is annularly around the upper cover **11** to form the installation space **13** and the accommodating space **14**. The upper cover **11** comprises a partition wall **111** positioned between the installation space **13** and the accommodating space **14**, and one end surface of the partition wall **111** is connected to one end surface of the light diffusion portion **23**. The upper cover **11** and the base **12** are assembled to each other indeed through the plurality of first connection portions **123**. Then, the driving unit **32** is mounted on the central light-emitting portion **21** and electrically connected with the circuit board **25**, and then the fan blade **31** is arranged on the driving unit **32**. Finally, the upper cover **11** is assembled on the base **12**, i.e., the cooling fan having a light-emitting effect can be assembled.

After the circuit board **25** is connected to an external power source, the circuit board **25** will drive each of the plurality of light-emitting elements **26** to release the light **27** respectively, while the light **27** released from each of the plurality of light-emitting elements **26** is enabled to pass through each of the light guide strips **22** from the segment gap **211** where each of the light guide strips **22** is connected with the central light-emitting portion **21**, such that a guide path is formed by using each of the light guide strips **22** to guide the light **27** to the light diffusion portion **23**. After passing through the light diffusion portion **23**, the light **27** enters the light diffusion plate **24** from the first diffusion portion **28** via the gap portion **29** to form a diffused light (not shown in drawings). However, when the light **27** passes through the first light guide strips **221**, it can penetrate through the light diffusion portion **23** directly and pass through the gap portion **29** and then enter the light diffusion plate **24** via the first diffusion portion **28** to form a first diffused light **271**. When the light **27** passes through the second light guide strips **222**, the light **27** passes through the first section **223** first and is then branched into the two second sections **224** to form a branched light **272** respectively in the two second sections **224**. The two branched lights **272** then pass through the corresponding gap portion **29** through the light diffusion portion **23**, and then enter the light diffusion plate **24** via the corresponding first diffusion portion **28** to form a second diffused light **273**. In other words, the first diffused light **271** and the second diffused light **273** form the diffused light in a direction of the light diffusion plate **24**. Since the first diffused light **271** is formed by passing through the light diffusion portion **23** directly using the linear first light guide strips **221** and then passing through the corresponding gap portion **29** and the first diffusion portion **28**, and the second diffused light **273** is formed by branching the light **27** to two branched lights **272** through the first section **223** and then passing through the light diffusion portion **23**, the corresponding gap portion **29** and the first diffusion portion **28**. Therefore, the light intensity of the first diffused light **271** will be larger than that of the second diffused light **273**, such that the first diffused light **271** can pass through the corresponding gap portion **29** and first diffusion portion **28** of the light diffusion plate **24** to be guided into each of the extending diffusion portions **242**, and further the entire light diffusion plate **24** forms a uniform light-emitting effect. Furthermore, since one end surface of the partition wall **111** is connected to one end surface of the light diffusion portion **23**, a part of the first diffused light **271** and the second diffused light **273** can be guided into the upper cover **11** through the light diffusion portion **23**, such that the upper cover **11** produces a uniform light-emitting effect.

In addition, when the base **12** is made from a light-permeable material, the bottom plate **121** and the plurality of outer side plates **122** of the base **12** present a uniform light-emitting effect through the first diffused light **271** and the second diffused light **273** which are formed by the light diffusion portion **23** and the first diffusion portion **28**, and further any face of the entire frame body **10** presents a uniform reflective effect. On the contrary, when the base **12** is made from a light-tight material, a reflection layer is respectively formed on a side surface of each of the bottom plate **121** and the plurality of outer side plates **122** of the base **12** in the accommodating space **14**, and therefore, the first diffused light **271** and the second diffused light **273** can be reflected using the reflection layers, such that the first diffused light **271** and the second diffused light **273** are projected outwards through the upper cover **11** through the reflection effect of the reflection layers, and further the light-emitting effect of the upper cover **11** can be increased.

As shown in FIG. **6**, FIG. **7** and FIG. **8**, there is provided another cooling fan having a light-emitting effect. In the

present embodiment, a plurality of first diffusion portions **281** is arranged on the light diffusion portion **23**, wherein each of the first diffusion portions **281** is convexly arranged on the light diffusion portion **23** and corresponds to each of the first light guide strips **221** and each of the second sections **224**, and the first diffusion portion **281** is a semi-convex lens surface convexly arranged on the light diffusion portion **23**.

Therefore, when the light **27** respectively passes through the first light guide strips **221** and the second sections **224** to form the two branched lights **272**, the two branched lights **272** will then enter into the light diffusion portion **23** and then pass through the first diffusion portions **281** to form the first diffused light **271** and the second diffused light **273** respectively, and further the entire light diffusion plate **24** forms a uniform light-emitting effect. Furthermore, since the partition wall **111** is connected to one end surface of the light diffusion portion **23**, a part of the first diffused light **271** and the second diffused light **273** will be guided into the upper cover **11** via the light diffusion portion **23**, such that the upper cover **11** produces a uniform light-emitting effect.

Furthermore, in the present embodiment, a second diffusion portion **282** which corresponds to each of the first diffusion portions **281** is respectively arranged at a position of the light diffusion plate **24** relative to the first diffusion portions **281**, and each of the gap portions **29** is formed between each of the first diffusion portions **281** and each of the second diffusion portions **282**. In the present embodiment, each of the first diffusion portions **281** is a semi-convex lens surface which is convexly arranged on the light diffusion portion **23**, and each of the second diffusion portion **282** is a semi-concave lens surface which is concavely arranged on the light diffusion plate **24**.

Accordingly, in the present embodiment, when the light **277** passes through the first light guide strips **221** and the second sections **224** respectively to form the two branched lights **272**, and the two branched lights **272** will then enter into the light diffusion portion **23** and next passes through the first diffusion portions **281** to form the first diffused light **271** and the second diffused light **273** respectively, the first diffused light **271** and the second diffused light **273** will pass through the gap portion **29** and form a third diffused light **274** via the second diffusion portion **282**, such that the third diffused light **274** is uniformly distributed in the light diffusion plate **24**, and further the entire light diffusion plate **24** forms a uniform light-emitting effect.

Therefore, when the base **12** is made from a light-permeable material, the bottom plate **121** and the plurality of outer side plates **122** of the base **12** present a uniform light-emitting effect through the first diffused light **271**, the second diffused light **273** and the third diffused light **274** which are formed by the light diffusion portion **23**, the first diffusion portion **281** and the second diffusion portion **282**, and further any face of the entire frame body **10** presents a uniform reflective effect. On the contrary, when the base **12** is made from a light-tight material, since a reflection layer is respectively formed on a side surface of each of the bottom plate **121** and the plurality of outer side plates **122** of the base **12** in the accommodating space **14**, the first diffused light **271**, the second diffused light **273** and the third diffused light **274** can be reflected using the reflection layers, such that the first diffused light **271**, the second diffused light **273** and the third diffused light **274** are projected outwards through the upper cover **11** through the reflection effect of the reflection layers, and further the light-emitting effect of the upper cover **11** can be increased.

From the above, in the present invention, the frame body **10**, the light-emitting assembly **20** and the fan blade assembly **30** form the cooling fan having a light-emitting effect.

Furthermore, the light **27** emitted from the plurality of light-emitting elements **26** is uniformly diffused into the first diffused light **271**, the second diffused light **273** and the third diffused light **274** through the plurality of linearly arranged first light guide strips **221**, the plurality of Y-shaped second light guide strips **222**, the plurality of first diffusion portions **28**, **281** and the second diffusion portions **282**, such that the single upper cover **11** or the entire frame body **10** can present a uniform light-emitting state via the first diffused light **271**, the second diffused light **273** and the third diffused light **274**, thereby increasing the visibility when the cooling fan is used.

What is claimed is:

1. A cooling fan having a light-emitting effect, comprising:

a frame body, including a base and an upper cover which is made from a light-permeable material and forms an installation space together with the base;

a light-emitting assembly mounted on the base, including a circuit board, a plurality of light-emitting elements which are electrically connected with the circuit board and emit a light respectively, and a light guide plate, wherein the light guide plate includes a plurality of light guide strips which correspond to each of the plurality of light-emitting elements respectively to form a guide path that guides the light, and a light diffusion portion which is connected with the plurality of light guide strips; the light diffusion portion including a first diffusion portion in a position corresponding to each of the plurality of light guide strips, such that the light passes through the guide path to form a diffused light via the first diffusion portion, such that the upper cover is in a uniform light-emitting state; and

a fan blade assembly arranged in the installation space, including a driving unit which is electrically connected with the circuit board and a fan blade which is driven by the driving unit to rotate in the installation space.

2. The cooling fan having a light-emitting effect according to claim **1**, wherein the first diffusion portion is a semi-convex lens that extends outwards from the light diffusion portion.

3. The cooling fan having a light-emitting effect according to claim **2**, wherein the plurality of light guide strips further include a plurality of first light guide strips and a plurality of second light guide strips, wherein each of the plurality of first light guide strips extends to the light diffusion portion from each of the plurality of light-emitting elements; and each of the plurality of second light guide strips further comprises a first section which extends from the plurality of light-emitting elements and two second sections which extend to the light diffusion portion from the first section respectively.

4. The cooling fan having a light-emitting effect according to claim **3**, wherein the diffused light further comprises a first diffused light and a second diffused light, wherein the first diffused light is formed by passing through the plurality of first light guide strips and then through the first diffusion portion; and the second diffused light is formed by passing through the first sections of the plurality of second light guide strips to form two branched lights and enabling the two branched lights to pass through the second section and then pass through the first diffusion portion.

5. The cooling fan having a light-emitting effect according to claim **1**, wherein the light guide plate further comprises a

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central light-emitting portion in which the circuit board is arranged, and the plurality of light guide strips are connected between the central light-emitting portion and the light diffusion portion.

6. The cooling fan having a light-emitting effect according to claim **1**, wherein the light diffusion portion further comprises a light diffusion plate, and the first diffusion portion is located on the light diffusion plate and forms a gap portion with the light diffusion portion.

7. The cooling fan having a light-emitting effect according to claim **6**, wherein the first diffusion portion is a semi-concave lens surface.

8. The cooling fan having a light-emitting effect according to claim **7**, wherein the plurality of light guide strips further include a plurality of first light guide strips and a plurality of second light guide strips, wherein each of the plurality of first light guide strips extends to the light diffusion portion from each of the plurality of light-emitting elements; and each of the plurality of second light guide strips further comprises a first section which extends from the plurality of light-emitting elements and two second sections which extend to the light diffusion portion from the first section respectively.

9. The cooling fan having a light-emitting effect according to claim **8**, wherein the diffused light further comprises a first diffused light and a second diffused light, wherein the first diffused light is formed by passing through the plurality of first light guide strips and then through the first diffusion portion; and the second diffused light is formed by passing through the first sections of the plurality of second light guide strips to form two branched lights and enabling the two branched lights to pass through the second section and then pass through the first diffusion portion.

10. The cooling fan having a light-emitting effect according to claim **6**, wherein a first connection portion and a second connection portion which are connected to each other are further arranged between the light diffusion plate and the base.

11. The cooling fan having a light-emitting effect according to claim **10**, wherein the base is further made from a light-permeable material, such that the entire frame body is in a uniform light-emitting state using the diffused light.

12. The cooling fan having a light-emitting effect according to claim **10**, wherein the base further comprises a bottom plate in which the first connection portion is arranged, and a plurality of outer side plates which are annularly arranged on the bottom plate.

13. The cooling fan having a light-emitting effect according to claim **6**, wherein the light guide plate further comprises a central light-emitting portion in which the circuit board is arranged, and the plurality of light guide strips are connected between the central light-emitting portion and the light diffusion portion.

14. The cooling fan having a light-emitting effect according to claim **1**, wherein the light diffusion portion further comprises a light diffusion plate, and a second diffusion portion is arranged in a position, which corresponds to the first diffusion portion, on the light diffusion plate; and a gap portion is formed between the second diffusion portion and the first diffusion portion.

15. The cooling fan having a light-emitting effect according to claim **14**, wherein the first diffusion portion is a semi-convex lens, and the second diffusion portion is a semi-concave lens portion.

16. The cooling fan having a light-emitting effect according to claim **15**, wherein the plurality of light guide strips further include a plurality of first light guide strips and a plurality of second light guide strips, wherein each of the plurality of first light guide strips extends to the light diffusion portion from each of the plurality of light-emitting elements; and each of the plurality of second light guide strips further comprises a first section which extends from the plurality of light-emitting elements and two second sections which extend to the light diffusion portion from the first section respectively.

17. The cooling fan having a light-emitting effect according to claim **16**, wherein the diffused light further includes a first diffused light, a second diffused light and a third diffused light, wherein the first diffused light is formed by passing through the plurality of first light guide strips and then through the first diffusion portion; the second diffused light is formed by passing through the first sections of the plurality of second light guide strips to form two branched lights and enabling the two branched lights to pass through the second sections and then pass through the first diffusion portion; and the third diffused light is formed by enabling the first diffused light and the second diffused light to pass through the second diffusion portion.

18. The cooling fan having a light-emitting effect according to claim **14**, wherein the light guide plate further comprises a central light-emitting portion in which the circuit board is arranged, and the plurality of light guide strips are connected between the central light-emitting portion and the light diffusion portion.

19. The cooling fan having a light-emitting effect according to claim **14**, wherein a first connection portion and a second connection portion which are connected to each other is further arranged between the light diffusion plate and the base.

20. The cooling fan having a light-emitting effect according to claim **19**, wherein the base is further made from a light-permeable material, such that the entire frame body is in a uniform light-emitting state using the diffused light.

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